Development of stainless steel gas electron multipliers

Completed Technology Project (2015 - 2016)

Project Introduction

We will develop gas electron multipliers GEMs) that are robust in negative ion gas to improve the sensitivity of X-ray Polarimeters.

We will develop a technique for fabricating GEMs that will both maintain the required spacing over arbitrarily large areas and be self-aligning. It will be based on separating two tensioned foils.

We will establish the foil tensioning technique and the optimum spacing between the foils.

- When the process is finalized, we will formalize the foil tensioning technique and measure creep, temperature stability and flatness using methods established for GEM testing.
- Finally we will assemble a 3x7 cm^2 GEM that will be integrated into a polarimeter and we will measure the gain uniformity over the area of the GEM.

Anticipated Benefits

Improves the sensitivity of exsiting polarimeters by ~ factor of 3.

Primary U.S. Work Locations and Key Partners

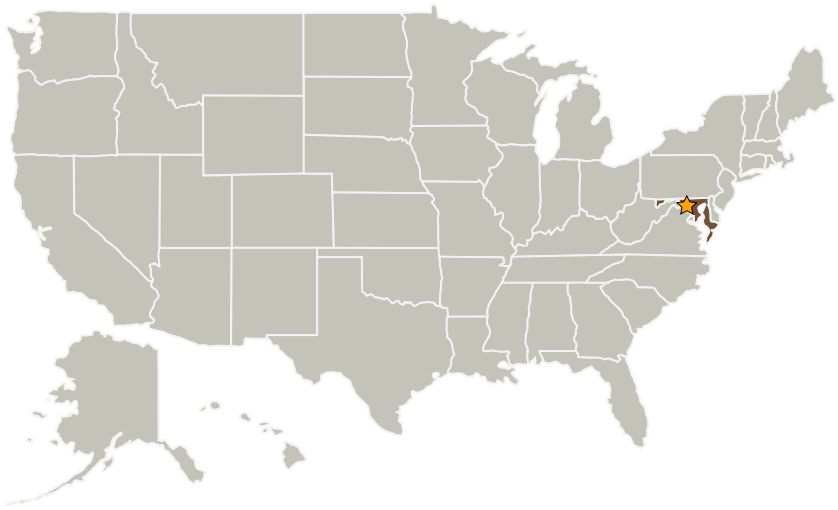

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Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Images	2
Project Website:	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3

Center Independent Research & Development: GSFC IRAD

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Images

Development of stainless steel gas electron multipliers Project
Development of stainless steel gas electron multipliers Project *(https://techport.nasa.gov/image/19298)*

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:
Mission Support Directorate (MSD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Independent Research & Development: GSFC IRAD

Project Management

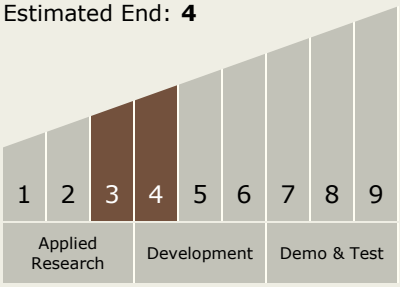
Program Manager:
Peter M Hughes

Project Manager:
Stan Hunter

Principal Investigator:
Joanne E Hill-kittle

Technology Maturity (TRL)

Current: **3**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes